

Daytime zonal drifts in the ionospheric 150 km region estimated using EAR observations

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The Equatorial Atmosphere Radar (EAR), located at Kototabang, Indonesia has been used to study the characteristics of daytime 150 km echoes. Multi-beam observations of the 150 km echoes made using the EAR provide unique opportunity to study both vertical and zonal **ExB** drifts. In an earlier study, we have carried vertical **ExB** drifts and compared with those made using C/NOFS and also with those made using the Gadanki MST radar. Similar study on zonal drifts, however, has not been studied before. In this paper, we focus on studying daytime zonal drifts at 150 km and E region altitudes using multi-beam observations of 150 km and E region echoes made using the EAR. We also make a detailed comparison of these drifts in an effort to understand the role of electric field and neutral wind. Zonal drifts (positive eastward) in the E and 150 km regions are found to be in the range of -10 to -60 m/s and -40 to 80 m/s, respectively. In the E region, zonal drifts show height reversal and temporal variations having tidal signature and noticeable seasonal variations. We address local time and seasonal characteristics of the zonal drifts in the E region and 150 km region in an attempt to understand the plausible role of tides.